

What is claimed is:

1. A solid, resilient, high temperature resistant material, fabricated by coating or molding an aqueous dispersion or suspension, comprising:
  - a. between approximately 30 and 80 dry weight percent of ceramic fibers, made of amorphous silica and/or magnesium silicate, capable of withstanding continuous exposure to temperatures in excess of 2,000 °F; and
  - b. between approximately 20 and 50 dry weight percent of a low temperature expanding vermiculite.
2. The material of claim 1, further comprising between approximately 5 and 30 dry weight percent of high aspect ratio vermiculite.
3. The material of claim 1, wherein said ceramic fibers are between approximately 6 mm and 50mm in length, and between approximately 3 microns and 20 microns in thickness.
4. A method of forming a solid, resilient, high temperature resistant material comprising the steps of:
  - a. forming an aqueous paste composition comprising between approximately 30 and 80 dry weight percent of ceramic fibers, made of amorphous silica and/or magnesium-silicate capable of withstanding continuous exposure to temperatures in excess of 2000 °F, and between approximately 20 and

50 dry weight percent of low temperature expanding vermiculite; and

b. heating said aqueous paste composition to evaporate substantially all of the water therefrom, and to thereby form said material.

5. The method of claim 4, further comprising, prior to step (b), the step of adding between approximately 5 and 60 dry weight percent of low temperature expanding vermiculite.
6. The method of claim 4, further comprising, prior to step (b), the step of adding between approximately 0.05 and 0.5 wet weight percent of an emulsifier and/or coagulant, and approximately 30 to 50 wet weight percent of water, so as to provide for a more homogeneous mixture.
7. The method of claim 4, further comprising, prior to step (a), the step of dry mixing said ceramic fibers alone, so as to separate said fibers from one another.
8. The method of claim 4, wherein said ceramic fibers are between approximately 6 mm and 50 mm in length, and between approximately 3 microns and 20 microns in thickness.

9. A method of making a seal for a catalytic converter, comprising the steps of:
- a. placing a predetermined amount of ceramic fibers into a mixer/blender and agitating said ceramic fibers at a rotor speed of between approximately 500 rpm and 1000 rpm, a panning speed of between approximately 15 rpm and 30 rpm, at a mixer/blender tilt angle of between approximately 0 and 10 degrees, for between approximately one and three minutes, so as to provide effective separation of said fibers from one another;
  - b. adding high aspect ratio vermiculite, water, and an emulsifier and/or coagulant to said ceramic fibers, and mixing at a rotor speed of between approximately 500 rpm and 1000 rpm, a panning speed of between approximately 15 rpm and 30 rpm, at a mixer/blender tilt angle of between approximately 10 and 20 degrees, for between approximately one and three minutes, so as to create a first mixture;
  - c. adding a low temperature expanding vermiculite to said first mixture, and mixing at a rotor speed of between approximately 500rpm and 1000 rpm, a panning speed of between approximately 15rpm and 30rpm, at a mixer/blender tilt angle of between approximately 20 and 30 degrees, for between approximately one and three minutes, so as to create a second mixture; and
  - d. mixing said second mixture, at a rotor speed of between approximately 500rpm and 1000 rpm, a panning speed of between approximately 15rpm and 30rpm, at a mixer/blender tilt angle of between approximately 0 and 10 degrees, for between approximately one and three minutes, so as to produce a homogeneous pasty blend.

10. The method of claim 9, further comprising the step of applying a portion of said homogeneous pasty blend as a thick paste to the exterior surface of a monolithic catalyst structure.
11. The method of claim 10, further comprising the step of applying heat to said thick paste and said monolithic catalyst structure, so as to evaporate substantially all of the water.
12. The method of claim 9, further comprising the step of applying a portion of said homogeneous pasty blend as a thick paste to an injection molding tube covering a monolithic catalyst structure.
13. The method of claim 12, further comprising the step of applying heat to said thick paste and said monolithic catalyst structure, so as to evaporate substantially all of the water.
14. The method of claim 9, further comprising, prior to step (d), the step of adding a an emulsifying agent, of approximately less than, or equal to, one percent of said second mixture in order to keep the water from separating prior to heating.

15. The method of claim 9, wherein said ceramic fibers are between approximately 6 mm and 50 mm in length, and between approximately 3 microns and 20 microns in thickness.
16. A catalytic converter having a monolithic catalyst, an outer housing, and a seal, for sealing between the monolithic catalyst and the outer housing, wherein the seal is made from a solid, resilient, high temperature resistant material, fabricated by coating or molding an aqueous dispersion of suspension, comprising:
- a. between approximately 30 and 80 dry weight percent of ceramic fibers, made of amorphous silica and/or magnesium silicate, capable of withstanding continuous exposure to temperatures in excess of 2,000 °F; and
  - b. between approximately 20 and 50 dry weight percent of a low temperature expanding vermiculite.
17. The catalytic converter of claim 16, further comprising between approximately 5 and 30 dry weight percent of high aspect ratio vermiculite.
18. The catalytic converter of claim 16, wherein said ceramic fibers are between approximately 6 mm and 50 mm in length, and between approximately 3 microns and 20 microns in thickness.